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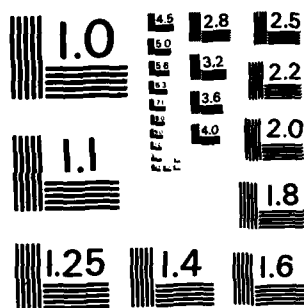
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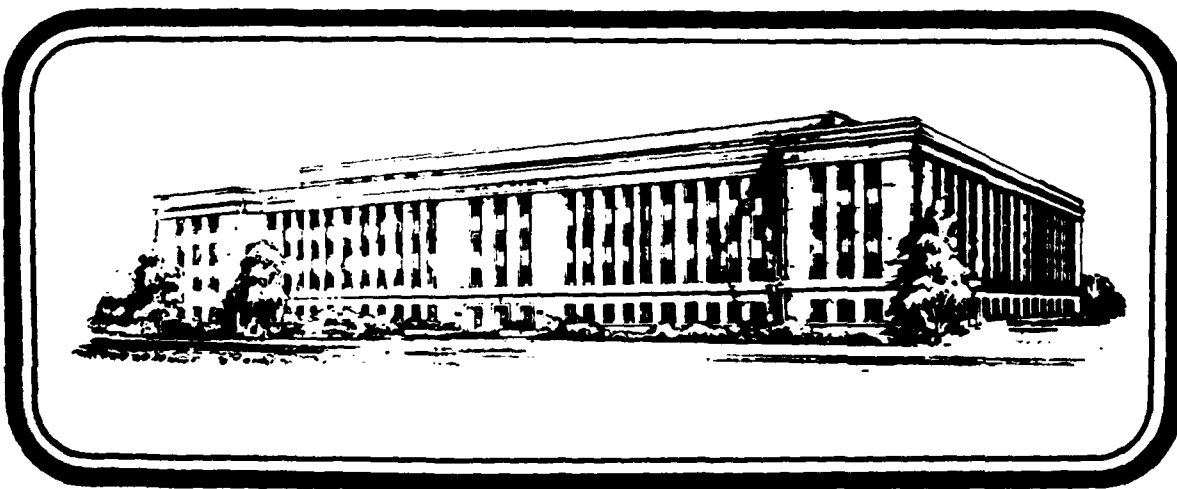
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**MOBILIZATION AND DEFENSE MANAGEMENT
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**THE IMPACT OF OSHA AND EPA ON DEFENSE
INDUSTRY AND THE IMPLICATIONS
FOR MOBILIZATION**



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THE INDUSTRIAL COLLEGE OF THE ARMED FORCES
NATIONAL DEFENSE UNIVERSITY

THE IMPACT OF OSHA AND EPA ON DEFENSE INDUSTRY
AND THE IMPLICATIONS FOR MOBILIZATION

by

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A RESEARCH REPORT SUBMITTED TO THE FACULTY
IN
FULFILLMENT OF THE RESEARCH
REQUIREMENT

RESEARCH SUPERVISOR: DR. EDWIN TIMBERS
THE INDUSTRIAL COLLEGE OF THE ARMED FORCES

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**ABSTRACT OF STUDENT RESEARCH REPORT
INDUSTRIAL COLLEGE OF THE ARMED FORCES**

NAME OF RESEARCHER (S) Mr. William Durrwachter, GS-15 LTC Donald A. Kane, USAF CAPT James E. Thompson, USN	TITLE OF REPORT The Impact of OSHA and EPA on Defense Industry and the Implications for Mobilization
SECURITY CLASSIFICATION OF REPORT Unclassified	REPORT NUMBER M SP #14, 1983

ABSTRACT

Problem Statement: It is hypothesized that OSHA and EPA regulations have substantially added to the costs of weapon systems and delayed the completion of defense contracts. It is also hypothesized that these regulations will inhibit the capability of the affected contractors to surge in response to a national emergency. This paper investigates these hypotheses.

Findings/Conclusions:

1. The true current costs of OSHA and EPA are not separable from other business costs.
2. The initial costs of OSHA and EPA to industry were significant, but follow-on costs are at the 1 to 2 percent level.
3. OSHA is only one part of the safety-and-health regulatory system in American industry. Environmental protection is also firmly entrenched in Federal, state, and local laws and regulations.
4. The Reagan Administration has influenced how OSHA and EPA deal with industry. Today, OSHA and EPA are cooperating with industry.
5. Organized labor strongly supports OSHA. The public supports OSHA and EPA requirements. Industry supports the bulk of these requirements.
6. Both industry and government recognize the importance of long-term liability concerns for environmental damage and health-and-safety claims.
7. Mothballed defense plants do not meet EPA requirements, and mothballed defense-production equipment does not meet OSHA standards.
8. The OSH Act contains emergency waivers, but some of the environmental laws do not contain waiver provisions for Federal activities and/or private contractors.
9. Industry is unaware of possible waivers and plans to meet all OSHA and EPA requirements in the event of mobilization.
10. DOD plans to examine OSHA and EPA waiver requirements as they occur during mobilization, because the Reagan Administration is reluctant to seek amendments to current laws and regulations.

Recommendations:

1. Evaluate liabilities for long-term health or environmental damage caused by mobilization-induced waivers.
2. Evaluate bringing stockpiled defense-production machinery up to standards.

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3. Standby and/or mothballed defense-industry base available for surge and/or mobilization should be defined and kept current with specific OSHA and EPA requirements.
4. Establish OSHA and EPA waiver mechanisms for Federal and other jurisdictions.
5. Evaluate and rank order priorities for Federal and contractor-production facilities and the supporting subcontractors that will be required for mobilization in the light of OSHA and EPA requirements and/or waivers.
6. Incorporate environmental and health-resource requirements into Defense Production Act procedures.

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EXECUTIVE SUMMARY

This study analyzed the impact of the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA) on defense industry and the effects that OSHA and EPA regulations could have on a production surge and/or mobilization. Industry and some governmental agencies claim that OSHA and EPA regulations have imposed considerable costs on industry and that they have actually driven manufacturers out of business. Many of these manufacturers serve defense industry and would be required during surge and mobilization. It has also been claimed that unless OSHA and EPA regulations are waived or relaxed, mobilization would be difficult at best.

The study had two basic thrusts: first, to look at the cost of defense industry compliance with OSHA and EPA regulations and second, to examine the effects of these regulations on mobilization. Costs were studied on a dollar-cost basis and in terms of production-time delays. The effect of OSHA and EPA regulations on mobilization was examined both for a single industry production surge and for total national mobilization. Finally, the study focused on existing waiver provisions for OSHA and EPA laws and on the need for, and possibility of, obtaining waivers to these laws.

The study encompassed an extensive literature review, interviews with industry and government officials, and visits to selected plants and installations. On the basis of these efforts, some of the more significant conclusions are as follows:

1. The true current costs of OSHA and EPA are not separable from other business costs. The initial costs of OSHA and EPA to industry were significant, but follow-on costs are at the 1 to 2 percent level.
2. OSHA is only one part of the safety-and-health regulatory system in American industry. Environmental protection is also firmly entrenched in Federal, state, and local laws and regulations.
3. The Reagan Administration has influenced how OSHA and EPA deal with industry. Today, OSHA and EPA are cooperating with industry.
4. Organized labor strongly supports OSHA. The public supports OSHA and EPA requirements. Industry supports the bulk of these requirements.
5. Both government and industry recognize the importance of long-term liability concerns for environmental damage and health-and-safety claims. These concerns also affect mobilization.
6. Mothballed defense plants do not meet EPA requirements, and mothballed defense-production equipment does not meet OSHA standards.
7. The OSH Act contains emergency waivers, but some of the environmental laws do not contain waiver provisions for Federal activities and/or private contractors.

8. Industry is unaware of possible waivers and plans to meet all OSHA and EPA requirements in the event of mobilization.

9. DOD plans to examine OSHA and EPA waiver requirements as they occur during mobilization, because the Reagan Administration is reluctant to seek amendments to current laws and regulations.

CHAPTER I

INTRODUCTION

"As for defense, frankly, we are not doing well and if this nation wants an adequate defense industrial base over the next decade and beyond, some things will have to be turned around --- and soon." (1:1).

"----- pollution control regulations have clearly led to the early retirement of many facilities that had been marginally economic earlier, but that did not justify the additional investment associated with compliance." (2:378)

"Many of the bottlenecks (to surge capability) have resulted from the closure of forging and casting facilities and the lack of construction of new facilities. During the 1970's, literally hundreds of foundries closed as a result of environmental, health and safety laws and regulations imposed by the Federal Government." (3:13)

"----- frequently OSHA standards speed up the normal replacement cycles and cause the industry to install a possibly more productive and competitive technology than it was using previously." (4:24)

"Much of the rhetoric surrounding the topic of the increasing amount of government regulation in the United States has been misdirected." (5:57)

A. THE PROBLEM

The divergent viewpoints represented by the above quotes serve to underscore the need for a comprehensive review of the impact of the Occupational Safety and Health Act (OSHA) and the Environmental Protection Agency (EPA) on the costs and performance of major defense contractors. Such a study of today's impact would have its own intrinsic value, but, more importantly, should address the future. How will OSHA and EPA affect the

capability of defense industry to surge production in peacetime or to mobilize in the event that war clouds gather? How significant is this impact? How does the future OSHA/EPA impact on surge/mobilization compare with other recognized limitations such as a shrinking industrial base and a reluctance of many firms to seek out defense business? When these "how" questions are answered, plans and programs can be designed and evaluated to mitigate the impact of OSHA and EPA on mobilization.

Evaluating these "how" questions is not an easy task, as there is no clear consensus in the United States as to the real impact of OSHA and EPA on American industry and society. The wide diversity of opinion as expressed in the statements quoted earlier underscore this uncertainty. Consequently, any study of the impact of OSHA and EPA on mobilization must first examine their impact on today's industry and the societal expectations created by these organizations. This study was designed to provide just such an evaluation and to suggest extrapolation of these findings to future surge and/or mobilization efforts.

B. THE HYPOTHESIS

The hypothesis established by the Industrial College of the Armed Forces was in response to the wide range of opinions expressed in the press, current literature, and even in Congressional documents on the impact of OSHA and EPA. (3:13) The open-ended hypothesis is as follows:

It is hypothesized that EPA and OSHA regulations have substantially added to the costs of weapon systems and delayed the completion of defense contracts. It is also hypothesized that these regulations

will inhibit the capability of the affected contractors to surge in response to a national emergency. The study will either prove or disprove these hypotheses. If the hypotheses are substantiated, it will identify those regulations which are counterproductive and recommend remedial action, such as temporary suspension during mobilization and war or their repeal or amendment.

C. METHODOLOGY

The first phase of the research was to conduct an extensive literature search on the topic to separate fact from opinion. Special emphasis was placed on obtaining hard evidence as to the extent of the financial impact of OSHA and EPA. Interviews with government officials and representatives of industrial associations comprised the second phase. A note-taking guide was used in these sessions and is included as Appendix G. This effort was to ascertain current perceptions of OSHA and EPA and to see if these beliefs could be substantiated. During this phase, DOD officials were interviewed as to their plans for addressing the specifics of OSHA and EPA impact in the event of mobilization. The final phase of the study was to visit with corporate officials charged with the day-to-day administration of OSHA and EPA programs within their corporate headquarters, regional offices, and individual plants and factories. The emphasis here was to determine supervisor and worker perceptions and expectations of OSHA and EPA both today and in the event of a production surge dictated by mobilization.

CHAPTER II

THE ENVIRONMENTAL PROTECTION AGENCY

In an effort to achieve a cleaner and healthier environment in the U.S., the Environmental Protection Agency (EPA) was established. Through an executive reorganization plan, a number of Federal environmental activities were consolidated into this single agency. The plan (Reorganization Plan Number 3 of 1970) was approved by President Nixon on July 9, 1970, and EPA was established by Congress as an independent agency in the Executive Branch on December 2, 1970. (6:3)

The creation of the Environmental Protection Agency was an evolutionary outgrowth of a series of Federal environmental laws enacted as early as the 1800s. The Rivers and Harbors Appropriation Act of 1899 prohibited waste discharges into U.S. navigable waters unless permits were granted by the U.S. Army Corps of Engineers. This permit system was later incorporated into the present National Pollutant Discharge Elimination System (NPDES) permit system. (7:81) The Public Health Service Act of 1912 authorized the investigation of water pollution where it affected human health. After the passage of the Oil Pollution Act of 1924, environmental concerns lay dormant until 1948, when the first Federal water-pollution law was enacted. In 1955, Federal funds were first appropriated to begin studying air-quality problems. The first Clean Air Act was passed in 1963 and amended in 1965, 1967, 1970, and again in 1977. (7:22)

Until the 1970s, the Federal role had been generally limited to the management of public lands, waterways, and natural resources. The National Environmental Policy Act (NEPA) was signed into law on 1 January 1970. This law effectively summarized the national concern for environmental protection and mandated that environmental factors be considered at every level of Federal decision-making. NEPA requires that whenever a major action is contemplated, a detailed analysis of the environmental impact of that action be prepared. The product, the Environmental Impact Statement (EIS), is available for review by the President, Federal agencies, and the public.

(7:152)

EPA was formed from fifteen components of the Department of Health, Education and Welfare (now Department of Health and Human Services), Department of Interior, Department of Agriculture, Food and Drug Administration, and the Atomic Energy Commission. This single agency is now responsible for air-pollution control, solid waste management, the drinking water program, the Federal water-pollution control program, the registration and regulation of pesticides, and radiation-protection standards. Through the enactment of major new environmental laws and amendments to older laws, EPA now administers eight comprehensive environmental protection laws.

This agency is directed by an Administrator and a Deputy Administrator, both appointed by the President. Additionally, the President appoints each of the six Assistant Administrators who are responsible for the implementation and enforcement of environmental laws, the performance of environmental research and development, and the management of EPA.

Agency-wide functions are administered through ten regional staff offices. These offices are charged to handle resource management, legal counsel, and the enforcement of EPA regulations. The offices of Administrative Law Judges, Civil Rights, Small and Disadvantaged Business Utilization, Science Advisory Board, Intergovernmental Activities, and Federal Activities located in Washington exist to assist the entire organization. Additionally, there are three environmental monitoring laboratories and eleven environmental research laboratories located throughout the U.S. (6:5)

CHAPTER III

THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

On December 29, 1970, Congress enacted Public Law 91-576, which is cited as the "Occupational Safety and Health Act of 1970". Under this Act, OSHA was created within the Department of Labor. The mission of OSHA is "...to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources...." (8:1) With minor exceptions, all employers and employees in the fifty states, the District of Columbia, Puerto Rico, and all other territories under Federal jurisdiction are governed by the provisions of this act.

Specifically, OSHA is tasked to reduce workplace hazards, provide for research in occupational safety and health, establish separate but dependent responsibilities and rights for employers and employees, maintain a reporting and recordkeeping system that monitors job-related injuries and illnesses, establish training programs, and develop mandatory job-safety and health standards. (9:2)

Accomplishment of these objectives is attained through ten regional offices. States are encouraged to develop and enforce their own job-safety and health programs. If the state plan is approved by OSHA, the state is paid up to 50 percent of the program's operating cost by OSHA. As of 1982, twenty-one state programs have been certified by OSHA. This certification is a necessary prerequisite for a state to operate its own program. (10:2)

The American labor force has recognized the need for OSHA in response to realities such as high on-the-job accident rates, cotton-dust problems and carcinogen hazards. About 200,000 fewer job-related injuries occurred in 1981 than in 1980. There were 100,000 fewer injuries serious enough to warrant time away from work, and there was a marked drop in illness during the same period.(11:1) This success rate indicates that OSHA has finally reversed the accident-and-illness trend that has occurred since 1965.(12:76,78)

The OSHA Act in itself may not be an issue in the event of mobilization. Included in this act is a provision which empowers the Secretary of Labor to grant "reasonable variations, tolerances, and exemptions to and from any or all provisions of this Act as he may find necessary and proper to avoid serious impairment of the national defense. Such action shall not be in effect for more than six months without notification to affected employees and an opportunity being afforded for a hearing (8:17). However, there is doubt that such a waiver would be effective, since OSHA regulations are now a well-established part of the American working environment.

CHAPTER IV

OSHA AND EPA - - - TODAY AND THE YEARS AHEAD

The rules and regulations enacted by OSHA over the years have largely been accepted by American society. The labor force feels that their best interest, safety, and health are being protected by OSHA. Conversely, industry is of the opinion that some of the laws are too stringent, unnecessary, and possibly being abused by labor (see Appendix C). In this climate of constant debate over the interpretation of the OSHA Act of 1970 and the laws that have followed, OSHA is more dedicated to the refinement of its positions than to the creation of new rules and regulations. OSHA is in more of a reactive mode and is making every attempt carefully to prepare and research new standards. (15:) This is evidenced by its FY 83 objectives, which place emphasis on the areas of stronger management, extended employer/employee assistance, more effective state programs, and the improvement of Federal agency programs.

(14:1)

OSHA has made considerable progress over the past few years. This is evidenced in overall agency management, the reduction of paperwork, standards development, the enforcement of regulations, progress with state programs, and many other areas. (10:1,3) Although these accomplishments are impressive, the continuing need to assure employee safety and health is indeed evident.

Problems of a different nature are being faced by EPA. Since late 1982,

the Agency has been subjected to a furor that alleges wrongdoing by Agency management. These charges are compounded by the appearance of political manipulation of agency programs and conflicts of interest. These current events lead some to question the ability of the EPA to provide cost-effective protection to the environment. (15:A4)

Doubts as to the effectiveness of the EPA are further kindled by the continuing debates between the Administration and Congress on the renewal of the following key acts:

<u>ACT</u>	<u>EXPIRATION DATE</u>
Noise Control Act	9/30/79
Clean Air Act	9/30/81
Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)	9/30/81
Clean Water Act	9/30/82
Ocean Dumping	9/30/82
Solid Waste/Resources Conservation and Recovery Act (RCRA)	9/30/82
Safe Drinking Water Act	9/30/82

Additionally, authorization for Research and Development by the EPA expired on September 30, 1982. Although these Acts and the authorization for Research and Development have expired, EPA continues to function within severe budgetary constraint. (16)

The future effectiveness of the EPA is largely dependent upon the resolution of these issues. Public opinion largely supports the EPA's goal to reduce the harmful effects of pollution on human health and the environment. However, the true financial costs to industry and society are currently in doubt.

CHAPTER V

THE NATURE OF OSHA AND EPA COSTS

Although OSHA and EPA did not come into being until 1970, the defense industry, with the rest of American industry, experienced environmental, health, and safety costs as early as 1908.(12:12) In the early part of this century, problems involving environmental damage and health-and-safety issues were serious enough to receive national attention and resulted in legislation to bring about change. However, particular problems resulted in very specific legislation rather than broad programs.

In the health-and-safety areas, child-labor problems brought on the Child Labor Laws; radiation problems helped create the Atomic Energy Act of 1954; construction injury increases led to the Construction Safety Act of 1962; and the Federal Coal Mine Health and Safety Act of 1969 followed well publicized coal-mine accidents.(17:9)

In the environmental areas, the same "specific-legislation-for-specific-problems" approach was used. The Federal Water Pollution Control Act of 1948 was in response to a well publicized series of pollution disasters. The Safe Drinking Act of 1974 was driven by the finding of carcinogenic chemicals in chlorinated drinking water in New Orleans in the early 1970s. Many cities and states had Clean Air Acts on the books as early as the 1940s in response to air-pollution disasters such as occurred in Donora, Pennsylvania. It was the recognition of air-pollution problems that made St. Louis homeowners and

industry switch from coal to oil and natural gas. Denver banned home and business trash incinerators for the same reason. (7:9,10)

In addition to legislative responses to specific problems, there were other events that predate OSHA and EPA standards and which had a cost impact on American industry. The first workmen's compensation act came into being in 1908. 1911 witnessed the first state workmen's compensation law while the last state waited until 1948 to pass one. (12:13) Although the original intent of the 1908 law was to apply it to government employees, it was quickly adopted for private industry. In 1936, the Public Contracts Act, known as the Walsh-Healey Act, was passed primarily to set wages and maximum work hours after the National Industrial Recovery Act of 1933 was declared unconstitutional. Its secondary purpose was to enforce health-and-safety regulations on holders of government contracts of \$10,000 or more. The wage-and-hour mechanisms were subsequently thrown out, but the health-and-safety features remained in force. In fact, the Secretary of Labor issued the first uniform code of health-and-safety standards (the forerunner of OSHA standards) under the Walsh-Healey Act in the late 1950s. (18:102)

In the environmental arena, the Water Pollution Control Administration was created in 1948 and given a mandate of coordinating and standardizing water-pollution criteria, evaluation techniques, and research in environmental areas. As a consequence, states, cities, and other municipal agencies began to set stricter standards for receiving water and placed limits on industrial pollutant concentrations (pretreatment standards) for companies using public-wastewater-treatment facilities. Drinking-water standards were promulgated by the U.S. Public Health Service, and air-pollution standards were also established.

Regardless of the specific cause or sequence of events, American industry has had a long history of paying for environmental and workplace health-and-safety measures. Some of these costs resulted from the specific dictates of a government agency, and others were in recognition of social responsibilities (wastewater treatment, for example) or in response to the basic economics of the situation (safety glasses and safety shoes). For these reasons, it is difficult to arrive at the total cost of environmental and/or health standards, because they have come on stream over a long period and because they received different accounting treatment over the years.

Prior to EPA and OSHA, there were private agencies setting health and environmental standards. Health-and-safety standards were offered as consensus codes by a variety of industrial organizations. These included the American Standards Association (ASA), American Society of Mechanical Engineers (ASME), National Fire Protection Association (NFPA), National Board of Fire Underwriters (NBFU), and the American National Standards Institute (ANSI). (19:15) These codes were voluntarily adopted by American industry in an attempt to codify those features that would provide both health-and-safety features and serve as a basis for product comparison and reliability. These standards dictated requirements ranging from electric wiring to toilet-seat design. However, they were not mandatory and were adopted only where common sense and good practice dictated. The environmental areas had similar standards, especially in engineering design and pollution-control evaluation. These standards represent another layer of environmental and health costs responsibly accepted by industry long before there was an OSHA or EPA.

When OSHA and EPA started to set standards, Executive Orders were issued directing Federal agencies to take the lead and set the example of compliance with standards. This had a direct and expensive impact on Federal agencies, especially the Department of Defense. The DOD was directed to provide funds for meeting all OSHA and EPA standards or their equivalents. However, these Executive Orders also affected defense contractors when they were worked into the Defense System Acquisition Regulation (DAR). In addition, DOD was directed by these Executive Orders to upgrade Government Owned and Contractor Operated (GOCO) facilities to comply with all applicable standards.(12:63) Although this dealt mostly with capital costs, it did involve operating costs, which were the contractor's responsibility. The result was to pass mandatory costs onto industry, but these costs were not always recognized in the accounting procedures as total environment and health costs or as incremental costs.(12:64,65) Thus, these costs were real and yet difficult to trace and categorize.

In the beginning, OSHA promulgated a whole host of standards by adopting as consensus standards most of the voluntary standards then in existence (ANSI and NFPA standards, for example). These affected the broad spectrum of American industry. As OSHA matured, the agency began to issue specific standards that affected particular industries. The cotton-dust standard hit the textile industry; the asbestos standard hit the construction and shipbuilding industries (retrofit); and the benzene standard primarily affected the chemical industry. It became difficult to trace the effects of these standards on other industry groups, such as defense-industry

contractors. This is but another reason why it is difficult to identify and quantify defense-weapon-system costs directly attributable to OSHA and /or EPA.

The EPA environmental regulations and standards, unlike OSHA standards, were largely geographically specific, and only to a lesser degree were they industry or process specific. While there were levels of air-or water-pollution standards common to all facilities emitting a specific pollutant, it was the location that ultimately determined the required standards. If a particular watershed (river, lake, or estuary) or air-quality area (valley, Los Angeles basin, etc.) were experiencing serious environmental degradation, standards were set at whatever level was required to correct that particular problem. In areas not experiencing any serious environmental problems, standard setting was based not on problem correction but on the protection of the existing clean environment. This latter reasoning set the stage for the "no-significant-additional-deterioration" air-quality standards for regions enjoying excellent air quality such as the Teton/Yellowstone region. (7:22) In addition, the EPA is divided into ten regional areas which promote standards reflecting the desires and life styles of the people in those regions. (6:4,5) That is why water-quality standards in the Pacific Northwest are much more stringent than those in the industrial Northeast. Therefore, two identical manufacturing plants in different parts of the country could experience vastly different EPA-related environmental costs. In addition, these plants' costs could differ widely as to capital vs. operating costs. All these factors make it difficult to identify and track environmental costs levied against defense industries.

Both capital and operating cost were mandated by both OSHA and EPA. For OSHA, about 29 percent of total expenditures was for capital costs, and 71 percent was for operating and maintenance costs in 1972. In 1981, that split had changed very little and was 27 percent and 73 percent respectively. (20:8) For EPA requirements, the data available for 1979 indicate that 52 percent of total cost went for capital expenditures and 48 percent for operations and maintenance. (21:24) This difference between OSHA and EPA cost structure is to be expected, since the bulk of the OSHA impact is procedural and related to health-and-safety programs, whereas the EPA impact relates to industrial processes and is tied to facilities.

Although this study deals with the impact of both OSHA and EPA on defense industries, the cost data for these two agencies are usually reported separately after collection by different methods. Consequently, it is almost impossible to obtain reliable data on both OSHA and EPA, broken down into annual capital costs and operating costs as well as total and incremental costs collected by the same source and by the same method. McGraw-Hill, for example, publishes past and current data on pollution-control capital expenditures but not on operating costs. It reports OSHA costs for both capital and operating costs separately. (22:2) The Council on Environmental Quality (CEQ) reports EPA-related costs on a total basis, including R & D and the EPA yearly budget. (23:239) The U.S. Department of Commerce reports only total annual pollution-control capital costs for pollution abatement. (24:50,25:17) The Office of Management and Budget (OMB) and the General Accounting Office (GAO) have estimates for the total combined costs of regulation, including EPA, OSHA, and at least four other regulatory organizations. (26:32,27:20)

A review of journals and association publications indicates many general statements to the effect that EPA and OSHA regulatory burdens are enormous and growing. Spokespersons for industrial organizations often claim that if OSHA and EPA could be rolled back, productivity and profitability would increase and industrial capacity would return to former levels. Conspicuously absent are cost data to support these allegations. Occasionally figures of the CEQ, the Department of Commerce, or McGraw-Hill are offered in evidence, but very often the authors specify that the cost figures are incremental, total, capital, or operating costs, when, in fact, the original report cataloged them otherwise. In short, the few cost estimates available are overused, abused, or mis-stated. It is easy to see why proponents and opponents of OSHA and EPA are unable to debate using accepted facts and figures. Instead, they make their arguments with generalities.

What are the costs of OSHA and EPA to American industry? For OSHA, industry experiences about a 30/70 split between capital costs and operating costs.(28:5) Through the 1970s, on average, OSHA-like programs accounted for about 2 percent of capital costs for industry as a whole. In 1981, that percentage dropped to 1.5 percent of capital costs and is expected to average about 1.3 percent through 1984.(20:1,3) Survey projections from this study suggest that real health-and-safety spending will decline rapidly in the out years. This reflects the belief that the present administration will continue its pressure against the rise in government regulation plus the fact that much of the OSHA-driven retrofit is now history.

Another way to look at overall OSHA-related costs is in terms of

productivity loss. A special study by Brookings Institution economist, Edward Denison, indicated that the actual productivity reduction due to environmental health costs from 1967 through 1975 is much lower than previously believed. Mr. Denison found that productivity dropped by only 0.42 percent due to health-and-safety regulations. (4:24) The components of the 0.42 percent consisted of 0.09 percent for auto safety, 0.24 percent for mine safety, and only 0.09 percent attributable to OSHA.

EPA costs to American industry have been estimated at about 1 to 3 percent of capital costs and have varied over time and as new laws and regulations have come on stream. (29:27,30:7,31:24) The split between capital costs and operating costs for EPA requirements is about 80/20. That is, the operating cost of an environmental system runs about 20 percent of the initial capital cost on an annual basis. This varies between industries and according to the degree of environmental pollution abatement expected from the capital projects. For the steel industry, for example, it averages about 15-20 percent with a range of 7 to 46 percent. (32:6,33:20,34:149,35:7)

The outlook for future EPA-related costs is not as clear as it is for OSHA for two reasons: First, environmental laws and regulations that significantly affect American industry are still being added. The impact of the Resources Conservation and Recovery Act (RCRA), for example, is just now being felt as a cost to industry. The second reason for the clouded future has its roots in the strength of the current economic recovery. As excess and dormant capacity is brought back on line, environmental capital and operating cost will rise considerably. The rule of thumb is that the first 80 percent of industrial

plant capacity will experience average retrofit costs, but to get the last 20 percent of idle capacity back on line will escalate environmental costs on a logarithmic growth basis.(5:65)

In sum, OSHA and EPA cost American industry about 1 to 2 percent of capital expenditures, with another increment of operating cost represented as being about 2 to 4 percent of capital costs. The costs to major defense contractors are considerably lower than the average, because these firms are generally clean operations, and they have been in the forefront of meeting OSHA and EPA requirements. The supporting subcontractors and suppliers, however, probably experience costs greater than average. Taken together, the costs to defense industry probably mirror that experienced by American industry as a whole.

CHAPTER VI

OSHA-RELATED COSTS

Since 1970, there has been a distinct pattern to the nature of OSHA costs. This pattern was associated with the start up and maturing of OSHA and related laws and standards. When OSHA was initially chartered, government, industry, unions, workers, and the general public all had expectations as to what OSHA would accomplish and how quickly it would start functioning. OSHA was expected to come out running, and everyone grew impatient as OSHA deliberated on setting standards. OSHA felt pressured to speed up the standard-setting process and turned to voluntary industry associations (ANSI, NFPA, and others) as well as the existing Federal Safety Standards as sources of ready-made standards. In 1971, as a result, OSHA took the Federal Safety Standards and the bulk of the voluntary standards and reissued them as mandatory OSHA standards. This was done without adequate review, and it gave OSHA a poor reputation that took years to overcome.

The American National Standards Institute (ANSI) had been issuing voluntary health-and-safety guidelines with other associations since 1918. Over 12,000 had been issued, most of which had been well accepted, especially the electrical and fire codes. Some of the standards had little value, but, because they were voluntary, they caused little difficulty for industry. That changed when OSHA declared them mandatory. OSHA now required split toilet seats, specified the hanging height of fire extinguishers, and even dictated

the temperature of restroom hand driers. Others were downright confusing, such as "piping located inside or outside buildings may be placed above or below ground". (36:9)

These ridiculous standards caught the media's attention and overshadowed the hundreds of beneficial standards, such as machine guarding, deadman switches, and standardized hazard-warning signs and labels. The result was a very negative attitude toward OSHA that was hard to reverse. That negative attitude is still echoed in statements to the effect that OSHA is ineffective, anti-business, and financially burdensome to industry. (37:2)

Just as OSHA was ill prepared at the outset to issue carefully thought out standards, OSHA inspectors were also starting at ground zero. OSHA had to recruit and then train inspectors, because the pool of experienced safety specialists and industrial hygienists was inadequate to staff the inspection function. As a consequence, the neophyte OSHA inspector wrote up standard violations that he or she could easily recognize and that were not in scientific dispute. Plant-inspection writeups were full of such violations as two- vs. three-prong electrical plugs and ungrounded wall sockets. However, ventilation-system deficiencies and heat-stress problems were almost never mentioned, even though they existed. OSHA inspectors were initially unsophisticated and wrote up the obvious and the mundane. However, with time, OSHA inspectors, and hence OSHA inspections, matured and gained technical competence and respect.

Industrial firms' managers and their health-and-safety staffs were also new at the OSHA game. The corporate staff could get copies of the Federal

Register and try to determine the essence of the standards published in that document. The result too often was confusion followed by resignation to whatever the OSHA inspector wrote. The firms that did have experienced health-and-safety staffs and that did make an effort to catalog hazards and estimate corrective costs faced another dilemma. Should they correct those hazards ranked highest in terms of death, disability, and lost-time injuries, or should they correct such OSHA-recognized hazards as the two-prong plug? Priorities were often re-set from solving real problems to solving compliance problems. One aerospace firm determined that it would cost \$3.5 million for OSHA compliance but only \$0.4 million for real hazards. (12:53) However, before OSHA neither of the two sums would have been funded.

As OSHA matured, programs, standards, and inspections were significantly improved and gained industry acceptance. OSHA has deleted many of the ridiculous standards and converted others from specification standards to performance standards (i.e., from the type and thickness of wood in a ladder rung to specifying only its strength). This retrenchment was not easy, for example, because unions viewed any rescission of standards as a retreat to the unsafe working conditions that existed prior to OSHA. (38:C1) Also, even changes in the color and size of warning signs drew protests from safety-sign manufacturers and paint companies which had made capital investments based on the original standard.

With time, industry accepted the standards and the costs associated with them. Existing plants and equipment were retrofitted where possible and where economical to meet OSHA standards. These standards were incorporated into new

plant and equipment throughout American industry. In some cases, the forced change was even cost effective. The vinyl-chloride standard, for example, forced the chemical industry to protect its employees from exposure to the raw materials used in vinyl-chloride production. Product-input leaks were detected and corrected, and systems were redesigned. The amount of product constituents and the products thus saved paid for the OSHA-mandated changes. (12:540)

Costs to retrofit plant and equipment were initially easy to recognize and quantify. Later, as OSHA standards were incorporated into changes dictated by technical or manufacturing requirements, cost identification became very difficult. When new plants were built, OSHA standards became part and parcel of commonly accepted design standards. Equipment for new plants was ordered from firms that had long ago incorporated OSHA standards into their products. It is no longer possible to buy equipment today that does not incorporate OSHA into its design. This puts U.S. production machinery mothballed under the Defense Production Act in the classification of antiques. Thus, the costs and benefits of OSHA are not obvious today as far as accounting trails are concerned.

OSHA also irreversibly affected the worker. Emphasis on preventive medicine through worker education raised the health-and-safety-education level of employees, changed perceptions of prior work practices, and raised levels of worker expectations. Good health-and-safety practices, protective equipment, and a demand for safe products on the job and at home, have become an accepted way of life in industry. Hard hats, safety shoes and glasses, and

ear protectors not only have gained worker acceptance, but have also become status symbols of the American worker. From the employee's point of view, there is no turning back.

Therefore, it is understandable why studies of OSHA costs are few in number, often inaccurate and unreliable, fail to report both total cost and incremental costs, and incorporate a whole host of modifying factors and assumptions in the study design and results. There are a few high-quality studies, including the Arthur Anderson study done for the Business Roundtable, that deal with incremental costs. They indicate that the bulk of OSHA costs would have been borne by industry as accepted practice in today's environment even if not mandated by OSHA. Industry is finding that its response to OSHA standards is, on the average, cost effective over the long run. Interviews with knowledgeable DOD officials, defense contractors, and industrial association representatives corroborate this and agree with studies reporting similar findings. OSHA has worked through its birth pains and has come of age and is today an integral part of doing business.

As OSHA matured, several of its standards were challenged in court. The Supreme Court threw out the benzene standard, because OSHA failed to show that the benefits of a stricter benzene standard (a lower allowable workplace concentration of benzene) were greater than the costs required to meet that standard. (39:68) At first review, it seemed that the courts were demanding a benefit/cost ratio equal to or greater than 1.0. This, however, was not the case, as the court later upheld a similar challenge to the cotton-dust standard even though a thorough benefit/cost ratio analysis failed to exceed

unity. The Supreme Court recognized the difficulty of placing a value on human life on the benefit side of the ledger. Thus, the OSHA philosophy has been upheld by the legal system.

Discussion with industry representatives and defense contractors indicate that OSHA has become a cooperative partner with industry rather than an adversary, as was the case in the 1970s. (See Appendix C.) Some attribute this to the current Republican Administration, and others see the change as simply the maturing of OSHA. Most, however, see the new phase as caused by a combination of the two influences. As such, they foresee an increased tempo of OSHA standard promulgation in the future but on a strong scientific and economic foundation.

CHAPTER VII

EPA-RELATED COSTS

EPA regulations have been historically aimed at those industries whose processes have the potential for major environmental damage. These industries are usually the basic industries where a great deal of product is contained in the air, water, and solid-waste leaving the facilities. The iron-and-steel industry, for example, without controls would emit a considerable volume of iron oxide into the air. Iron-and-steel wastewater streams contain considerable amounts of iron and other heavy metals as well as volumes of acid waste. This is also true for the chemical, nonferrous metals, electroplating, agricultural products, and mining industries.

Defense industry however, uses products from the basic industries in finished form, and its activity consists largely of assembly and fabrication. Defense industry, by and large, is clean and with minimal potential for major environmental damage. As a consequence, the EPA has had a minimal cost impact on defense industry. By and large, the capital costs mandated by the EPA have been met, and most retrofit of existing facilities has been completed. Pollution-control expenditures, expressed as a percent of capital planned for 1981-83, average 6.3 percent for all manufacturing, with a range of 0.6 to 19.6 percent within manufacturing. For the aerospace industry, it is 0.6 percent; 1.8 percent for auto, trucks, and parts; and 2.1 percent for machinery. (22:10) This low ratio for these three defense-related categories

reflects the fact that clean air-and-water requirements were met before and during the early EPA years and that defense industry is stable and has not experienced major expansion requiring massive environmental control expenditures.

EPA regulations, unlike those of OSHA, are targeted against those industrial processes that have major environmental impacts and that are in geographical locations where the environment has been most seriously damaged or where environmental degradation has not yet occurred and is prohibited. For example, heavy metals in wastewater effluent are a major EPA concern as are total hydrocarbon emissions in the atmosphere. Plating operations, sand blasting, paint stripping, and corrosion control are a few of the processes which generate wastes containing heavy metals. Heavy metal removal is expensive and would represent a significant level of capital and operating costs. To the extent that a major defense contractor performs these processes in-house, these treatment costs parallel the generating processes.

Hydrocarbon emission to the atmosphere is a major air-pollution concern. Hydrocarbons react with ozone in the presence of ultraviolet radiation to form photochemical oxidants responsible for smog. Consequently, control of hydrocarbon emissions could represent a considerable capital investment. Hydrocarbons are generated by industrial operations such as painting, solvent cleaning, or degreasing. Again, to the extent that these operations are done in-house, abatement cost will be required.

Geographical location plays an important role in determining environmental costs. Most corporations elect to use municipal wastewater-treatment

facilities because it is economical to do so. Usually, pretreatment of the industrial wastes is required to protect the municipal treatment plant (usually a biological process) from the toxic effects of the wastes. The degree of pretreatment required is geographically related. If a defense plant is located adjacent to a waterway designated as an important fishery, the treatment standards required of the municipal treatment plant will be stringent as well as the pretreatment requirement for the firm's industrial wastes. Conversely, if receiving water standards are low, costs will be relatively low.

The size of a municipal waste-treatment facility also influences industry costs. Industry pretreatment costs are usually inversely proportional to the size of the community. If a firm's wastewater volume is low compared with that of the community in which it is located, pretreatment costs are low because the dilution factor affords protection from toxic upset. Consequently, pretreatment costs per gallon of industrial waste would be lower for McDonnell-Douglas Corporation in St. Louis than for Fairchild Industries in Germantown, Maryland.

Unlike OSHA regulations, which are independent of the concentration of industry in an area, EPA regulations are modified to the extent that industry, and hence industrial pollution, is concentrated in an area. Consequently, as more industry is attracted to an already industrialized area, environmental standards are tightened for all inhabitants. The impact of this situation is to raise the unit environmental costs when production is significantly increased. This is especially true for air-pollution standards.

Geographic location plays a major role in determining air-pollution-control costs but in an unique way. If a firm is located in an area experiencing significant air pollution, standards will have been imposed at considerable costs. In the event a firm wants to locate in a basin or expand existing operations there, the incremental cost of doing so will be very high and perhaps prohibitive. Since no additional air pollution would be permitted, firms are inhibited from locating or expanding in the area unless they find some way to offset that expected increment of pollution by lowering pollution levels from existing plants there. (40:67) For example, a firm desiring to add a paint-spray operation to its plant could purchase and close (or modify) dry cleaning stores to offset the expected hydrocarbon pollution from the painting, since dry cleaners also emit hydrocarbons.

As was the case for OSHA standards, most EPA-related retrofit requirements have been met by industry. Some plants within certain industries chose not to retrofit older production facilities and have either built new plants or have accepted reduced capacity. Opponents of environmental regulation will argue that it was the incremental cost of EPA that forced the closing of factories and plants in communities that depended heavily on their existence. There is little evidence to support this claim, although it is often flaunted in trade journals and by some industrial associations. An extremely high cost estimate for environmental retrofit usually indicates a plant that is not productive and cost effective when measured against most commonly accepted economic standards used by that industry. In other words, inability to meet environmental standards is often indicative of an inability to meet

productivity and profitability standards as well. Plant closures are generally for failure to meet economic standards and not environmental standards, although the reasons may be publically stated otherwise. In fact, some authorities contend that the decision to close a plant and build a new facility to meet environmental standards has often resulted in a net gain in productivity and profitability. (4:24)

On the negative side of the ledger, however, is the fact that regardless of the cause, some plants were shut down and not replaced, especially foundries. This is especially true in today's period of excess industrial capacity. In the event of surge or mobilization, the industrial capacity represented by closed plants will not be available. Waiver of environmental regulation during mobilization would be a moot point, because waivers could not bring back a foundry, for example, that had been closed and torn down. To the extent of reduced industrial capacity, EPA regulations may have had at least a modest impact on the future costs of weapon-system acquisition during surge or mobilization.

CHAPTER VIII

DOD POSITION

The Department of Defense, more than any other government agency, is affected by EPA and OSHA regulations. This occurs either directly in DOD-operated facilities, such as naval shipyards, or in the facilities of private corporations doing business with DOD. It is in the interest of DOD and national security that the extent of these impacts be ascertained both during the normal peacetime atmosphere and during a time of national emergency, when industry must surge for increased production or when industry must be mobilized to support the increased readiness of the armed forces. It is important to know the dollar costs of meeting these regulations to support budget inputs and to develop tradeoffs to determine whether certain facilities and processes can be operated in an efficient and cost-effective manner. Potentially more important is the identification of any impact which results in delays to the delivery of equipment, facilities, and services so that action may be taken to insure such deliveries to support current and future surge mobilization needs.

Initially in the early 1970s, EPA and OSHA "came on strong" with regulations which included everything from toilet seats to nuclear radiation and affected nearly every industry in the country. The regulations, if enforced to the letter of the law, could either force some industries to close because they could not meet the requirements or increase the cost of doing business to an unacceptable level.

By executive direction, government agencies were and still are required to comply with EPA and OSHA regulations. Also, the policy at DOD was, and still is, that DOD activities and contractors working under DOD contracts will comply with EPA and OSHA regulations. (41:) Subsequent resistance by contractors and DOD activities required to comply with regulations resulted in the DOD working with EPA and OSHA to refine and clarify what requirements industry could be expected to satisfy and still provide satisfactory environmental, health, and safety protection. The impact on industry, the cost effectiveness of the regulations, and the history of the industry in meeting environmental, health, and safety standards are now considered when preparing, issuing, and enforcing regulatory requirements.

By working together, compliance with these regulations has resulted not only in safer working conditions, also but much of the industry has become more efficient and productive. Industry claims that 85 to 90 percent of the OSHA safety regulations would be met without OSHA. (See Appendix A, B and C.) Industry recognizes that it is less expensive to meet environmental, health, and safety requirements than to endure lawsuits, injunctions, high insurance rates, and lost time by skilled and highly productive workers due to accident or sickness.

During a period of surge production or mobilization, environmental protection and the safety and health of the workforce would remain a priority national objective. Increased production could involve the surge of a single industry to support a specific material need of the U.S. or an ally, or the mobilization of all industry to support a global conflict. In either case, the capacity and capability of industry must be available to support the effort.

At the present time, the capability and capacity are generally available for surge production. However, due to lead times for hi-tech components or complex weapons systems, it may take eighteen months before significant, sustained, and increased production could be achieved. Less time would be required for simpler material or equipment such as ammunition.

Increased production can be achieved in one or more of the following ways:

- A. Increase production in existing facilities through the use of overtime, additional workers, and/or additional shifts.
- B. Open facilities which were shut down for various reasons, including inability to meet environmental, health, and safety regulations.
- C. Modify operating or closed facilities to produce new or different product lines.
- D. Build new facilities.

For any method to increase production, an assessment must be made of the impact of environmental, health, and safety regulations. Consideration must be given to the fact that--

1. Increased production in existing facilities will result in increased air-and-water pollution, necessitating an evaluation of whether clean air-and-water standards will be met. OSHA health-and-safety requirements must be evaluated as more people and pollutants enter the work force from increased production. Old equipment pressed into service will be required to meet current safety standards.

2. Reopening old facilities will require a complete review for compliance

with environmental, health, and safety requirements. The extent of this review will depend on how long the facility was shut down and its degree of compliance prior to shutdown. Some government ammunition plants have been shut down over 25 years.(42:) As a result, no pollution-abatement equipment has been installed, and the mothballed production equipment has not been OSHA updated.

3. Modifying a facility to produce a different product than that for which it was originally designed will require a review of the environmental and health facilities to determine whether they are satisfactory or must be upgraded and/or modified to handle new processes and materials.

4. New facilities should be built with the latest pollution-control and safety equipment installed. It is difficult to purchase equipment without safety features installed, as manufacturers are concerned with lawsuits for selling unsafe equipment. Obtaining Environmental Impact Statements (EIS) and eventual approval generally consumes considerable time and effort for most new facilities.

During mobilization, there could be a large demand for pollution-abatement equipment, health-and-safety equipment, and modification kits to upgrade the safety of existing equipment. It is not certain whether production of this equipment could surge to be delivered in sufficient time to support the mobilization schedules of the facilities.

During a production surge or mobilization effort, instances will arise where environmental, health, and safety requirements cannot be met by industry. This could happen for a number of reasons, such as the

unavailability of pollution-control equipment, lack of technology, insufficient time to install equipment, and lack of equipment with safety features incorporated. Since the paramount reason for a production surge or mobilization is the production of more material in the shortest possible time, considerable controversy will arise if any delays are attributed to EPA and OSHA regulations.

Recently, we have seen the results of the past lack of environmental, health, and safety considerations. The Love Canal contamination, black lung in coal miners, brown lung in textile workers, silicosis in foundry workers, asbestosis in shipyard ladders, and hearing loss throughout industry have resulted in high costs to industry and government. Many of the lawsuit settlements today are from exposures dating back to World War II, and these claims can be expected to increase in the future. Recent court decisions are placing the burden of proof on industry to prove that it is innocent rather than requiring the worker to prove that industry caused the problem and that he was not a substantial contributor. Most of these problems would have been prevented if current requirements and procedures were available and utilized.

We are now at a time where technology is developing many new substances about which we know little, including long-term exposure risk. The use of these substances without adequate research into environmental protection and worker-health protection could result in serious future problems. In the event of a production surge or full-scale mobilization, many production facilities would have no reasonable means of complying with environmental health-and-safety regulations without delaying surge production. The

production facilities which could not have the necessary features installed to meet environmental, health, and safety regulations would become candidates for the waiver of these regulations. Waiver is used in the context of either eliminating or relaxing the requirement, recognizing that some control or limits are better than none.

Waiver of EPA and OSHA regulations might at first seem like a simple solution; however, in view of past experiences there will be a reluctance on the part of those in authority to waive any requirements, particularly where they involve health and safety. There will also be a reluctance on the part of the workers and unions who have been accustomed to safe and healthy working conditions to regress and accept any reduction in health and safety features in the workplace. Past indiscretions concerning the environment will cause environmentalists to be alert to and probably resist any new facilities which will adversely affect the environment. Industry itself may be reluctant to accept or implement some waivers, particularly those which have the potential for long-term exposure to hazardous substances or environmental damage, unless the government were to grant immunity from future lawsuits or assume responsibility for damage. This condition would not occur in government facilities, since the government is its own insurer.

As illustrated by Table 8-1, existing Federal laws make a number of provisions for waiving environmental regulations. The President may invoke these provisions if he makes the findings required by the various laws. DOD has the capability to waive all OSHA, but not all EPA, regulations in the event of an "official" national emergency. DOD feels that OSHA waivers,

TABLE 8-1 WAIVERS FROM ENVIRONMENTAL REGULATIONS

Law	President May Authorize ¹ Waiver from Regulations for:	
	Federal Agencies	Private Contractors
1. Clean Air	yes	yes
2. Water Pollution Control	yes	no
3. Solid Waste Disposal	yes	no
4. Toxic Substances	yes	yes
5. Noise Control	yes	no
6. Public Health/Safe Drinking Water	yes	no
7. Environmental Impact	yes	n.a. ¹

1. Applies only to Federal Actions

Source: Draft Study Report "Industries Base Actions in a Period of Rising
Tensions." June 82, (43:13).

if any, can be worked out between DOD and the Department of Labor. Each facility will be reviewed on a case-by-case basis by qualified military industrial hygiene/safety officers who will be recalled to active duty during mobilization specifically for this purpose.

While existing laws make some provision for waivers, the authorities provided would be inadequate in a number of respects:

- o Several important environmental laws make no provision to exempt privately-owned facilities.
- o There is no authority to waive regulations controlling the discharge of hazardous materials or toxic substances into the land, air, or water.
- o There is no statutory provision to waive the preparation of environmental impact statements (EISs) for major Federal actions, as required by the National Environmental Policy Act (NEPA). However, DOD feels that special CEO arrangements could be utilized in the event of a national emergency.

It is expected that in the event of a national emergency, changes to the law to issue waivers, where current authority is lacking, would be relatively easy to obtain. This is particularly true if the emergency was for a popular cause with the consensus of the public. Congress is not being asked to amend the acts specifically at this time to include waiver provisions in advance of any emergency, since to do so may result in unwanted changes of the acts. As existing legislation comes up for congressional renewal, the laws should be amended to strengthen waiver authorities, allowing the President to waive the regulations in the event of a national emergency.

Also needed is an identification of what waivers would be required for varying degrees of mobilization. Each situation must be evaluated to determine whether a waiver would result in a hazardous situation and the impact on national defense if the waiver were not issued. Where hazardous conditions result, contingency plans should be made to reduce the lead time to bring the facility into compliance.

Individual states and local governments have become increasingly concerned with the environmental, health, and safety issues in the industry within their jurisdictions. As a result, state and local governments have enacted laws to protect their specific needs. The laws may be more stringent than the Federal regulations or may include areas not covered by Federal regulations. If the Federal regulations were waived in the event of a national emergency, would the state and local governments also waive their laws? It is hoped that they would; however, there is nothing which guarantees that this will happen. The Federal law does not replace state and local government laws in this respect, and the state and local government laws do not necessarily yield to Federal Government determinations. This dichotomy might be resolved with a Federal law which makes Federal regulations the only legal requirements where a waiver has been issued by the President. Action of this type would probably be viewed as an infringement on states' rights and would almost surely involve a challenge on constitutional grounds in the courts. It would also be challenged as an unconstitutional delegation by Congress of legislative power to the President.

Many of the problems with state and local governments would be resolved if the Federal Government worked more effectively with these governments to develop mobilization planning. State and local officials complain that little is done to inform them or work with them in these matters.

CHAPTER IX

IMPACT OF OSHA AND EPA ON MOBILIZATION

The impact of OSHA and EPA will largely depend upon three factors. The first is the speed at which defense contractors, their suppliers and subcontractors, and, in turn, their suppliers and subcontractors can have their OSHA/EPA problems identified and placed under the provisions of the Defense Production Act. The Defense Production Act is geared to allocate resources to defense contractors in the event of mobilization. Allocation of health-and-safety-control and pollution-abatement funds, equipment, and/or waivers should be a part of the allocation mechanism of the Defense Production Act.

The second factor deals with how government approaches waivers to environmental, health, and safety requirements. It is one thing to waive a requirement but entirely another matter to waive liability long after mobilization ceases. Mobilization in World War II insured success, but liability for asbestosis in shipyard ladders, for example, was not foreseen or waived and came back to haunt industry even to this day. Today, OSHA is only a part of the larger web of legal constraints that has been woven through American industry. OSHA rules and regulations can be waived, but liability waiver does not follow. Industry will be reluctant to accept a waiver of OSHA requirements because of the liability issue. Industry will also look at OSHA waivers negatively, because skilled employees are valued and often

irreplaceable production assets. To a lesser degree, EPA waivers may also be unacceptable to industry because of the future liability question. There have been many instances where actions thought correct at the time were later ruled inadequate and industrial firms held liable for environmental damage. The Love Canal issue and the recent Times Beach dioxin problem are two examples. Since the waiver of environmental requirements cannot guarantee the waiver of future liability, industry would be reluctant to seek EPA waivers.

The third factor affecting the impact of the OSHA and EPA on mobilization is the degree to which the subcontractors, suppliers, and small jobbers are still in business. How deep is defense-production capability? If it is no deeper than the current defense-contracting base plus, say, about 20 percent, waivers of OSHA and EPA requirements are of academic interest only. Today's defense industry is in compliance with OSHA and EPA and could easily stay in compliance even with a three-shift/day, seven-day/week production schedule. Many knowledgeable people including Dr. Murry Weidenbaum, former chairman, Council of Economic Advisors believe that the defense-industry base has shrunk considerably and that standby or mothballed capacity does not exist.(44:61) If this is true, waivers for air-quality standards for a foundry that no longer exists is indeed a moot point. However, the degree to which idle or standby industrial capacity exists is beyond the scope of this study. If it does not exist, OSHA and EPA waiver mechanisms are meaningless. If the base does exist, waiver mechanisms may still not be useful because of industry's concern for future liability, worker expectations, the need to protect labor assets, and the inability to return to pre-OSHA/EPA equipment and industrial processes.

Taken together, these three factors indicate that the impact of OSHA and EPA will represent a modest 1-2 percent of capital costs and, based upon current experiences, a smaller percent of that for operating costs. OSHA and EPA requirements should be able to be incorporated into plans for surged production at existing facilities and into newly constructed or modified facilities. Meeting OSHA and EPA requirements should not delay production schedules. The one fly in the ointment is in the stockpiled production facilities and equipment. The facilities can probably be brought rapidly up to standards, but the equipment may present a problem. Industry's experience (see Appendix A & B) with getting this old equipment up to OSHA standards paints a dark picture for mobilization. Perhaps an overriding consideration for the use of this mothballed equipment is not whether it can be upgraded to meet OSHA standards but whether it can be used at all to meet today's exacting manufacturing tolerances for defense products.

Even though the impact of OSHA and EPA appears moderate, acceptable, and perhaps even cost effective over the long haul, this is not to say that problems will not exist. The mechanism for production-resource allocation is contained in the Defense Production Act and in the DOD and FEMA organizations established to implement that act. OSHA/EPA-related resource allocations need to be established and properly administered within the larger context of mobilization. The question of post-mobilization liability must also be realistically addressed. To date, this disconnect has not been addressed at all by industry, EPA, OSHA, or FEMA, and only to a minimal degree by DOD.

CHAPTER X

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. The true current cost impact of OSHA and EPA is not well defined, and costs are often not separable from other business costs.
2. The initial cost of OSHA and EPA to industry was significant, but current costs are declining to below the 1-2 percent level.
3. OSHA is only a part of the safety-and-health aspect in American industry. State programs such as workmen's compensation, the insurance industry structure, labor contracts, product-liability requirements and civil liability issues play an equal role with OSHA in safety-and-health costs.
4. Environmental protection does not have as large a constituency as does safety and health (i.e., environmentalists vs. employees) but it is firmly entrenched in Federal, state, and local laws, regulations, procedures and expectations.
5. The Reagan Administration is business-oriented, and this attitude has influenced how OSHA and EPA deal with industry.
6. OSHA and EPA are now cooperating with industry in a joint effort to fulfill environmental and health objectives.
7. Organized labor strongly supports OSHA.
8. The public supports OSHA and EPA requirements, and industry supports the bulk of these requirements.

9. Recent lessons from past mistakes have underscored the importance of long-term liability concerns for environmental damage and for health-and-safety claims. Both government and industry are paying for past indiscretions. As a consequence, the liability issues are major ones today and in the future.
10. Mothballed defense plants do not meet EPA requirements, and much of the mothballed defense-production machinery does not meet OSHA requirements.
11. The Occupational Safety and Health Act contains waiver provisions for Federal activities and private contractors in the event of a national emergency. However, four of the six environmental protection laws applicable to private contractors contain no waiver provisions for national emergency operations.
12. Industry plans on meeting OSHA and EPA requirements as an integral part of surge or mobilization efforts.
13. Industry is unaware of possible waiver approaches for OSHA and EPA requirements in the event of a national emergency.
14. The Reagan Administration is reluctant in advance of mobilization to open up the environmental laws to insert waiver provisions where they are lacking, because the Administration may not be able to control the results of congressional action in reviewing the legislation. The current Administration-Congress standoff with the resulting continuing resolutions each year is preferred by both sides.
15. EPA, OSHA, and FEMA have not looked at any aspect of OSHA/EPA concerns during surge and/or mobilization.

16. DOD has looked at OSHA and EPA concerns during surge and/or mobilization and does not see that any action is required now. Current informal plans are to examine the issues and waiver requirements, if any, as they occur during mobilization.

17. The severity and popularity of any national emergency will determine if and to what extent environmental, safety, and health waivers will be granted.

RECOMMENDATIONS

1. Evaluate and prepare studies addressing the question of liability for health or environmental damage caused by mobilization-induced waivers, but which appear only after mobilization has ended.
2. Evaluate the requirements for and approaches to bringing stockpiled defense-production machinery up to OSHA and EPA standards if it still meets production specifications.
3. Define the specifics of the standby and/or mothballed defense-industry base that could be available for surge and/or mobilization as these specifics relate to OSHA and EPA requirements. Keep it updated.
4. Establish plans to obtain and implement waiver mechanisms incorporating Federal, state, and local jurisdictional concerns.
5. Evaluate and rank order priorities for the allocation of funds, existing equipment, and waiver requirements for Federal and private production facilities and supporting subcontractors required for production surge and/or mobilization.
6. Establish the mechanisms to incorporate environmental and health-resource requirements into Defense Production Act procedures.

APPENDIX A

GENERAL DYNAMICS --- A CORPORATE VIEW

General Dynamics Corporation is one of the largest defense contractors and manufactures a variety of defense products including the F-16 fighter, the M-1 tank, and nuclear submarines. All aspects of environmental protection and occupational health come under the corporate Manager for Safety and Industrial Health. At the plant level, occupational safety and health comes under Industrial Relations; environmental protection is the responsibility of plant management. Each plant has about ten to fifteen people dealing with health and environmental issues.

General Dynamics, as many aerospace industry firms, has had a long history of compliance with Federal, state, local, and corporate health, safety, and environmental standards. Most of the major expenditures for OSHA and EPA have been in prior years. General Dynamics feels that about 75 percent of the OSHA and EPA requirements would have been met even if not mandated, because it was good business to do so and was economically cost effective. The other 25 percent is questionable as to its value. About 20 to 25 percent of OSHA/EPA cost is capital cost, and the rest is operating cost. Capital costs were much higher in the early 1970s. Total costs are expected to remain steady or to decline in future years. However, the impact of RCRA is still in the future. Corporate policy is to accept OSHA and EPA costs.

General Dynamics has noted a marked improvement in its relationship with

OSHA and EPA; this is primarily due to the current Administration's attempt to take a reasonable and cooperative approach toward industry. Relationships are now cooperative and not antagonistic as they had sometimes been in the past. Both agencies have shown a willingness to work with General Dynamics and solve problems on the spot as they occur without resorting to a formal write up.

There are, however, areas of sincere disagreement. One of these concerns OSHA's approach to the lead standard at the Electric Boat Division. OSHA has required expensive engineering controls to prohibit lead exposures and has not allowed substitution of a less expensive program using personnel protective equipment and biological monitoring. This concern carries over into the proposed nickel and chromium standards now under review and comment. An engineering-control approach to these two proposed standards could prove extremely expensive and bothersome. General Dynamics pointed out that they are following International Nickel Company's (INCO) effort to gather epidemiological data on their workers exposed to nickel over the years as a defense against a nickel standard requiring the engineering-control approach.

The Product Liability Act is giving General Dynamics and other aerospace firms some unforeseen problems. OSHA cited General Dynamics' Fort Worth plant for an unsafe press brake despite attempts to get it into compliance. They then went back to the manufacturer for additional parts, but the manufacturer refused to supply the needed parts unless General Dynamics bought a complete OSHA modification kit and held the firm harmless. The end result was a cost of \$400,000 to obtain a new press brake. An attempt was made to obtain a replacement machine from the DOD industrial machinery stockpile, but those

press brakes, as much of the stockpiled machinery, were also in violation of OSHA standards. The fact that DOD-stockpiled machinery is pre-OSHA does not bode well for mobilization.

General Dynamics sees RCRA requirements as looming large on the horizon and not amenable to the Administration's relaxed attitude. The costs of disposing of current wastes are high and are expected to climb as more stringent requirements are laid on waste generators, waste haulers, and disposal contractors. Costs for waste-disposal mistakes in the 40s, 50s, and 60s are also increasing. The General Dynamics Fort Worth plant, for example, is currently paying \$10,000/week to pump out ground water and treat it to remove a solvent that leaked into the ground water table over twenty years ago. The State EPA had mandated this remedy, and there is no end in sight.

General Dynamics was asked about the OSHA/EPA impact on their surge and/or mobilization capability. They indicated that they would meet any and all OSHA/EPA requirements that were required for expanded production. They feel that increased production would place the skilled worker, and even the semi-skilled but trainable worker, at a premium. Their recent experience with surge at their Electric Boat Division (see Appendix E.) reinforced experiences dating back to World War II, which indicate that lost-time illnesses and injuries can be expected to increase significantly with increased production. Therefore, anything that can be done to reduce these expected losses should be aggressively undertaken. General Dynamics feels that incorporating OSHA requirements into surge/mobilization efforts will be cost effective. Incorporating EPA requirements should also be cost effective

but in the long run rather than in the immediate period. The current Fort Worth ground-water-contamination problems serve as an expensive example that should be avoided in the future. The question of future liability after surge/mobilization (i.e., asbestosis in World War II shipyard workers, etc.) would also drive General Dynamics to accept OSHA and EPA requirements during periods of increased production.

APPENDIX B

MCDONNELL-DOUGLAS CORPORATION

At McDonnell-Douglas, occupational health and safety come under the Personnel Department, and environmental protection is the responsibility of Plant Engineering. Most contact on health and safety issues is with OSHA, although the State of Missouri gets involved through their Workmen's Compensation Administration and the Industrial Commission of Missouri (investigative arm of the Workmen's Compensation Administration). They interface with EPA on environmental issues as well as with state and local agencies on wastewater matters. Relationships with OSHA and EPA have improved markedly since the advent of the Reagan Administration. McDonnell-Douglas feels that both OSHA and EPA are now playing fair and being cooperative. The agencies have also reduced the frequency of inspections and inquiries. Since OSHA came into being, McDonnell-Douglas Corporation has had only \$1200 in fines and thirty citations. They feel that this is an outstanding record.

McDonnell-Douglas Corporation, as many aerospace firms, has had a history of compliance with health-and-safety standards. This is especially true because of the influence of their California-based operations. California had stringent health-and-safety standards years before OSHA. In addition, the aerospace industry is a clean industry and has not been particularly troubled with health-and-safety issues and environmental problems.

As at General Dynamics, the Product Liability Law has created problems for

McDonnell-Douglas. An original equipment manufacturer was reluctant to sell parts for a drop hammer unless the corporation purchased an OSHA retrofit kit for the machine and held the company harmless. The Toxic Substances Control Act (TOSCA) has also created problems. The Act requires chemical suppliers to provide Material Data Safety Sheets on each of the products sold. These data sheets provide generic health-and-safety information on the industrial and proprietary ingredients in the product. McDonnell-Douglas has found that some of their smaller suppliers are unable or unwilling to prepare the required information. Consequently, the corporation no longer obtains chemical products from these vendors. Their reasoning is that TOSCA will eventually require that this information be available to workers and to the ultimate disposal contractor. They feel that it is not their responsibility to relieve the vendor of this task.

McDonnell-Douglas predicts decreasing OSHA-related costs in the future (capital costs are largely past for the firm) but possibly increasing environmental costs due to RCRA, TOSCA, and proposed changes in the Clean Air Act. The Clean Air Act could prove restrictive for future expansion of painting operations because of solvent-carrier releases to the atmosphere. Solventless spray painting may be required for future production surges.

McDonnell-Douglas was also asked about the impact of OSHA/EPA on their surge/mobilization capability. They foresaw some environmental problems, but these were not expected to be insurmountable. They felt that EPA standards could and would be met. They also felt that OSHA standards were cost effective, especially for new employees hired during production surge. They were well aware of the high accident rate experienced during the first ninety

days or so of employment in American industry. McDonnell-Douglas also supports OSHA standards during surge to protect their existing aging work force. With age, workers are increasingly placed on limited duty for various health-related reasons (i.e., no heavy lifting, etc.), and this results in a loss of flexibility for the work force. Therefore, they desire to protect their skilled employees as needed.

APPENDIX C

VIEWS OF INDUSTRIAL TRADE ASSOCIATIONS

The following associations were visited: Aerospace Industries Association, American Iron and Steel Institute, National Association of Manufacturers, Shipbuilders Council of America, and the U.S. Chamber of Commerce. Interviews with representatives of these associations revealed commonality in several areas:

1. Data relative to the cost of OSHA/EPA regulations on industry (in time and/or money) were not identifiable nor maintained.
2. Initial cost for compliance with EPA standards was high, but modern machinery and equipment which have evolved from these requirements are not only cleaner but more cost effective. This was especially true for the steel industry.
3. In the event of mobilization, industry would seek relief from EPA requirements before it would seek relief from OSHA regulations. This is true because of the ingrained nature of OSHA regulations in the labor force and general acceptance of these standards by society.
4. EPA regulations do not enjoy the same degree of public/labor support as do those of OSHA.
5. Industry is of the opinion that many of OSHA regulations are questionable and that there is abuse of these and other regulations by labor. Labor, however, is very supportive of OSHA.

6. Some feel that the cost to industry of compliance with OSHA regulations exceeds the benefits gained, although they could not quantify this belief.

APPENDIX D

NORFOLK NAVAL SHIPYARD

PORTSMOUTH, VIRGINIA

On 11 February 1983, the research team was briefed by selected shops and work centers at the shipyard. Through these meetings and a tour of the facilities, we were able to observe operations and talk with both management and members of the work force.

Throughout the day, it was obvious that this government-owned-and-operated facility was making a sincere effort to comply with all safety-and-health regulations. This effort was evidenced in both management and the labor force. However, in some areas there appeared to be a missing link between safety regulations and common sense. Being a government facility, it is subjected not only to OSHA and EPA regulations, but also those imposed by DOD and the Naval Sea Systems Command. In many cases, the requirements of the latter two organizations are more demanding in time and money as well as duplicative in nature. According to one management official, these added requirements, above those placed on industry by OSHA and EPA, make the shipyard nearly non-competitive for some jobs.

Concerning the equipment standards established by OSHA and EPA, it was felt that the modern equipment, which is built to meet their standards, is more efficient. In many cases, however, retrofits are available for older equipment which meets their standards and is much less costly. (This point was felt to be significant as a mobilization issue.)

As previously stated, the safety and health of the labor force is a major concern of the shipyard. As such, when discussions of mobilization were addressed, true concern was justifiably expressed based on history. The following are statistical data which were provided: the U.S. Navy paid over \$170 million in workmen's compensation during 1982. Of this amount, nearly 90 percent of the claims were for accidents/events which occurred in previous years; 80 percent of the injuries at the shipyard occurred to people with less than five years experience; and 75 percent of the injuries occurred to people who had worked for a supervisor less than one week. Given this data, one can understand their reluctance to request OSHA and EPA waivers during a surge of mobilization effort.

Specifically addressing the mobilization issue, several observations were made: first, the large amount of paperwork required by OSHA and EPA would be deferred, but record keeping would be maintained; second, if the shipyard had to go to three shifts instead of one, there would be inadequate supplies of personal protective equipment as required by OSHA, and resultant EPA standards might be violated due to the increased tempo; and third, finding the necessary skilled people and educating them concerning available machinery and procedures would be a major issue, as would the hazards associated with placing women in many of the positions vacated by men going to war. In summary, it was felt that the mobilization issue has not been adequately addressed by the shipyard. In peacetime, the shipyard is doing a superb job in complying with OSHA and EPA standards, but no plan exists for mobilization.

APPENDIX E

GENERAL DYNAMICS ELECTRIC BOAT DIVISION GROTON, CONNECTICUT

The Electric Boat Division of General Dynamics Corporation in Groton, Connecticut is the largest builder of submarines for the U.S. Navy, building both the New TRIDENT class Fleet Ballistic Missile Submarines and the SSN 688 Class Fast Attack Submarines. Electric Boat Division is located in Groton, Connecticut on the Thames River. At the present time, the facility is operating near capacity. Production could not be significantly increased (doubled), the major constraint being the physical ability to expand the size of the facility at the existing location.

The director of industrial relations for Electric Boat Division, utilizing a staff of 30 people, is responsible for health-and-safety matters. The Director of Facilities with a staff of three is responsible for environmental affairs. The number of personnel in these offices has remained relatively stable since 1975.

Information on new OSHA and EPA legislation or changes to existing laws is obtained from the Federal Register, the Shipbuilders Council of America, and other sources. Electric Boat Division does not lobby per se but works through the Shipbuilders Council of America to effect legislation. This does not preclude their representatives from providing information to or discussing matters with members of Congress or their staffs.

Meeting EPA and OSHA regulations has involved considerable increased costs in terms of time and money. Since the Electric Boat Division's facility is 100 percent government owned, these charges are included in the cost of the ships and pass on to the Government. These costs involve facility increases, personnel increases discussed above, consultant costs, legal fees and additional paperwork which permeates the system. OSHA inspectors assigned to Electric Boat Division originally had little or no experience in the industry, resulting in many citations which were unreasonable or trivial. In the case of staging, compliance with OSHA requirements could create increased hazard. A \$250,000 citation was given to Electric Boat Division, which was subsequently reduced to \$88,000. Another citation involving two deaths was decided in favor of the company. As time progressed, the relationship between the OSHA and Electric Boat Division has improved due to improved dialogue, education of the inspectors, and change of administration.

Costs for OSHA and EPA regulations are in both overhead and operating costs. It is not easy to identify all of the costs, and such information is not available; however, estimated costs of over \$40,000,000 are easily identified (including \$26,000,000/year for meeting lead standards).

Electric Boat Division is concerned with impending OSHA regulations. New nickel and chromium standards now being prepared may cost as much as the lead standards. Again, these costs will be passed to the customer-- the Government. The company recognizes that OSHA is here to stay and that, even if the Government abolished OSHA, the courts would still get the task of resolving claims and disputes. Also, some state laws and maritime laws are

now more stringent than the OSHA requirements. Waiver or relaxation of EPA and OSHA standards during mobilization would raise questions of legal responsibility for any consequences arising from relaxed or waived standards. If a disaster similar to the asbestos problem or the noise problem would occur as a result of waived or relaxed standards, would the government grant immunity to the contractor or assume responsibility for any claims? Industry desires that common sense be used in the development and enforcement of the regulations and that it be done with a minimum of paperwork and reporting.

APPENDIX F

SUPERVISOR OF SHIPBUILDING

GROTON, CONNECTICUT

The supervisor of Shipbuilding, Groton, Connecticut is located in the Electric Boat Division of the General Dynamics Corporation facility at Groton, Connecticut. The supervisor's office is responsible for the administration of shipbuilding and design contracts between the U.S. Government and General Dynamics and employs approximately 450 military and civilian personnel. The supervisor's office has three people in the safety office reporting to security. The safety office is responsible for monitoring the contractor: it is not responsible for evaluating or enforcing contractor compliance with EPA and OSHA regulations. It maintains a neutral position between the contractor EPA and OSHA. It is concerned with the health and safety of the Government employees in the facility and works actively with the contractor to correct any deficiencies. Since the supervisor's office is located in the Electric Boat facility, Electric Boat is responsible for taking all necessary actions to meet EPA and OSHA regulations within the spaces occupied by the supervisor.

APPENDIX G

NAME

1. What is the function/mission of your office?
2. What office in your organization is responsible for health and safety?

For environmental affairs?

How big is the operation, and to whom do the directors report?

Has this group increased, decreased, or stayed the same since '75? Why?
3. How does your firm learn about new or proposed legislation that might affect your operations?

How do you interact with other agencies?

Do you affect legislation, lobby, have letter campaigns, have PAC membership?
4. Historically, what has been the impact of EPA/OSHA on your organization?

5. Aside from cost, how do EPA/OSHA regulations affect your firm? Has your firm had any litigation with OSHA/EPA?

Do state or local governments' roles in the environment-and-health area affect your firm? If yes, how?

6. To what extent has EPA/OSHA been responsible for lost or restricted capacity?

7. Have the costs (dollars or time) of EPA/OSHA been identified by either your firm or your industrial associations? If so, what are these costs, or what is your best estimate? Annual, one time, or recurring? Expressed as per cent of final product cost?

8. How do you cost out these expenses? Overhead?

9. How much of these costs are capital costs (i.e., treatment facility, scrubbers, etc.), and how much are maintenance or operating costs?

10. How are your suppliers and subcontractors affected by EPA/OSHA?

11. If your firm is a GOCO operation, what EPA/OSHA costs are your responsibility, and what are the Government's responsibility?

12. Do you anticipate further OSHA or EPA regulations to affect you? Explain.

13. If you were asked to surge your production under peacetime conditions (double it), could you do it? What could you do? What would be the constraints/bottlenecks? How long would it take? How would EPA/OSHA affect this?

14. Same as above except for mobilization. Need any waivers of EPA/OSHA rules?

15. Are you aware of any DOD plans to implement an EPA/OSHA waiver system in the event of mobilization?

BIBLIOGRAPHY

1. Harr, Karl G. Jr., "The Aerospace Posture: 1981," Aerospace, Winter, 1981, pp. 1-2.
2. Mueller, George E., "The Real Costs of Social Control Legislation," Vital Speeches of the Day, April 1, 1978, pp. 375-379.
3. U.S. Congress. House. Committee on Armed Services, The Ailing Defense Industrial Base: Unready For Crisis, Hearings, Washington, U.S. Government Printing Office, 1980, pp. 1-53.
4. Grinnold, Richard E., "A View of The Costs and Benefits of the Job Safety and Health Law," Monthly Labor Review, August 1980, pp. 24-26.
5. Leone, Robert A., "The Real Costs of Regulation," Harvard Business Review, November-December, 1977, pp. 57-66.
6. U.S. Environmental Protection Agency, Your Guide to The U.S. Environmental Protection Agency, Washington D.C., 1982, pp. 1-24.
7. Council on Environmental Quality, Environmental Quality 1981, Council on Environmental Quality, Washington D.C., 1981, pp. 1-190.
8. U.S. Laws, Statutes, etc., "Occupational Safety and Health Act of 1970," Public Law 91-596, 91st Congress, Washington D.C., U.S. Government Printing Office, 1977, pp. 1-31.
9. U.S. Department of Labor; Occupational Safety and Health Administration, All About OSHA, Washington D.C., 1982, pp. 1-45.
10. Department of Labor, "OSHA Accomplishments Under the Reagan Administration," Department of Labor News Release, Washington D.C., December 6, 1982, pp. 1-5.
11. Auchter, Thorne G., "Positive Results--Injuries and Illnesses Decline," Department of Labor News Release, Washington D.C., n.d., pp. 1-2.
12. Northrup, Herbert R., et al., The Impact of OSHA, The Wharton School, University of Pennsylvania, 1978, pp. 1-543.
13. Interview with Mr. Paul Devise, Member of The Subcommittee on Health and Safety, U.S. Congress, House Education Labor Committee, Washington, D.C., March 4, 1983.
14. U.S. Department of Labor, Communication of FY 83 Agency Objectives to All Employees, Washington, D.C., September 23, 1982, pp. 1-14.

15. Russakoff, Dale, "EPA Woes Dramatize the Struggle Over Pollution Policy" The Washington Post, March 6, 1983, p. A-4.
16. Interview with Mr. William Prendergrass, Deputy Director, Office of Legislation, Environmental Protection Agency, Washington, D.C., March 4 and 8, 1983.
17. Mendeloff, John, Regulating Safety, 1979, Cambridge Massachusetts, The MIT Press, pp. 1-217.
18. Breyer, Stephen, Regulation and Its Reform, 1982, Cambridge, Massachusetts, Harvard University Press, pp. 1-466.
19. MacAvoy, Paul W., OSHA Safety Regulation, American Enterprise Institute, 1977, Washington, pp. 1-104.
20. McGraw-Hill Publications Company, 9th Annual McGraw-Hill Survey of Investment in Employee Safety and Health, New York, June 1981, pp. 1-8.
21. Rutledge, Gary L., and O'Connor, Betsy D., "Plant and Equipment Expenditures by Business for Pollution Abatement, 1973-80, and Planned 1981," Survey of Current Business, June 1981, pp. 19-25.
22. McGraw Hill Publications Company, 13th Annual McGraw-Hill Surveys of Pollution Control Expenditures, New York, May 1980, pp. 1-11.
23. Alexander, Tom, "A Simpler Path to a Cleaner Environment," Fortune, May 4, 1981, pp. 234-254.
24. Rutledge, Gay L., and Trevathan, Susan L., "Pollution Abatement and Control Expenditures 1972-80," Survey of Current Business, February 1982, pp. 50-57.
25. Rutledge, Gary L., and O'Connor, Betsy D., "Plant and Equipment Expenditures by Business for Pollution Abatement, 1981, and Planned 1982," Survey of Current Business, June 1982, pp. 17-21.
26. Peskin, Henry M., et al., Environmental Regulation and the U.S. Economy, Baltimore, John Hopkins University Press, 1981, pp. 1-162.
27. Arthur Anderson & Company, Cost of Government Regulation Study for The Business Roundtable, March 1977, Washington D.C., pp. 1-12-15.
28. Thompson, Robert T., "OSHA Oversight," Statement of The Chamber of Commerce of The United States, September 23, 1961, Washington, D.C., pp. 1-32.

29. Carty, James P., "The Politics of Regulation: Understanding the Regulatory Complex," Personnel Administrator, June 1980, pp. 25-30.
30. Murrin, T. J., "Productivity: The Competitive Threat," Aerospace, Fall 1980, pp. 5-7.
31. Bowers, Edwin W., "Federal Waste Disposal Laws Generate Piles of Lawsuits" Iron Age, May 13, 1981, pp. 23-24.
32. McManus, George J., "Steel Still Battered by Operating Costs of Pollution Control," Iron Age, May 4, 1981, p. 5-15.
33. Nulty, Peter "A Brave Experiment in Pollution Control," Fortune, February 12, 1979, pp. 120-123.
34. "The Clean Air Act," Background, Republican Study Committee, September 4, 1981, pp. 147-159.
35. Arthur D., Little, Inc. Environmental Policy For The 1980's: Impact on The American Steel Industry, 1981, Report for the American Iron and Steel Institute, pp. 1-D-17.
36. Bell, John, "Unnecessary, Irrelevant...and Deleted," Job Safety and Health, July 1980. pp. 9-12.
37. Leshner, Richard L., "OSHA Oversight," Statement of the Chamber of Commerce of the United States of America, April 1, 1980. Washington, D.C., pp. 1-29.
38. Earley, Pete, "OSHA Scientist Sees Standards From Other Side," The Washington Post, December 7, 1982, p. C-1.
39. Mendeloff, John, "Reducing Occupational Health Risks: Uncertain Effects and Unstated Benefits," Technology Review, May 1980, pp. 68-78.
40. Howard, Niles, "New Ways to Shortcut Costly Rules," Duns Review, February 1980, pp. 62-67.
41. U.S. President. Executive Order. 12088, "Federal Compliance with Pollution Control Standards," Federal Register, October 17, 1978, pp. 47707-47709.
42. Interview with Mr. Donald Emig, Director, Environmental Policy, Office of the Assistant Secretary of Defense (MRA & L), Washington, D.C., November 5, 1982.

43. U.S. Department of Defense, Industrial Base Actions in a Period of Rising Tensions - Appendix II Draft, June 1982, pp. 1-33.

44. Weidenbaum, Murry, "Defense Buildup: Dangers In Doing Too Much Too Fast," U.S. News and World Report, November 22, 1982, pp. 61-62.

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